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DOCUMENT PREPARATION DEVICE

(Bunsho Sakusei Sochi)

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SPECIFICATION /1[1]

I. Title of the Invention

Document Preparation Device

II. Claims

1. A document preparation device wherein character fonts or symbol fonts corresponding to characters or symbols are prepared, displayed or printed is characterized by having

a character input means which photoelectricly converts the said characters or symbols to a signal by manually scanning on the characters or symbols,

a pattern dictionary storage means which stores character patterns and symbol patterns,

an input control means which converts the signal input from said input means to a pattern signal,

a character recognition control means which recognizes the characters or symbols input from said input means by retrieving the said pattern dictionary storage means and fetching a pattern corresponding to the pattern signal input from this input control means, and

a document preparation means which prepares character fonts or symbol fonts corresponding to the characters or symbols recognized by this character recognition control means, then displays or prints

[1] Numbers in the margin indicate pagination in the foreign text.

them.

III. Detailed Description of the Invention

[Purpose of the Invention]

(Field of Industrial Application)

This invention relates to a document preparation device for the preparation and edition of a document, such as word processor or personal computer, etc.

(Prior Art)

When a document was prepared by this kind of document preparation device before, an original was prepared beforehand and then input from a keyboard character by character to prepare a document. Accordingly, usually, this document preparation device had such a drawback that an original must be prepared and then further input from a keyboard for preparing one document, therefore it takes time twice, especially in case that someone is not familiar with the keyboard, the efficiency of document preparation is markedly deteriorated.

(Subject to Be Solved by the Invention)

In the conventional document preparation device as described above, it is common to prepare an original and then input this original from a keyboard to prepare a document, therefore this

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device had such a drawback that it takes time twice, especially in

case that someone is not familiar with the keyboard, the efficiency of document preparation is markedly deteriorated. Accordingly, this invention was made in view of the above drawback and is aimed at providing a document preparation device which can simply input the contents of an original into the device.

[Constitution of the Invention]

(Means for Solving the Subject)

This invention has such a constitution that

a document preparation device wherein character fonts or symbol font corresponding to characters or symbols are prepared, displayed or printed has

a character input means which photoelectricly converts the said characters or symbols to a signal by manually scanning on the characters or symbols,

a pattern dictionary storage means which stores character patterns and symbol patterns,

an input control means which converts the signal input from said input means to a pattern signal,

a character recognition control means which recognizes the characters or symbols input from said input means by retrieving the said pattern dictionary storage means and fetching a pattern corresponding to the pattern signal input from this input control means, and a document preparation means which prepares character fonts or symbol fonts corresponding to the characters or symbols

recognized by this character recognition control means, then displays or prints them.

(Functions)

In the document preparation device of this invention, if an operator holds a document input means to scan on characters of an original, the document input means photoelectricly converts said characters to a signal and outputs it to the input control means. The input control means converts the signal input from said input means to a pattern signal and outputs it to the character recognition control means. The character recognition control means recognizes the characters or symbols input from said input means by retrieving the pattern dictionary storage means to fetch a pattern corresponding to the pattern signal input from said input control means and gives the said fetched pattern to the character preparation means. The character preparation means prepares character fonts or symbol fonts corresponding to the characters or symbols recognized by said character recognition control means, then displays and prints them.

(Actual Example)

One actual example of this invention will be illustrated with reference to drawings. Fig. 1 is a block diagram showing one actual example of the document preparation device of this invention. **1** is a manual scanning OCR input part which irradiates characters or symbols written in an original, photoelectrically converts them by

numerous photoelectric conversion elements arranged in a line to an electric signal, **2** is an input control unit which controls the OCR input part **1**, converts the signal corresponding to the characters or symbols input from the OCR input part **1** to a pattern and outputs them to a character recognition control unit **5**, **3** is a format flag which keeps the input direction of input characters recognized by the input control unit **2**, **4** is a pattern dictionary unit which stores the character patterns and symbol patterns, **5** is a character recognition control unit which reads the pattern signal input from the control unit **2**, collates it with corresponding character patterns or symbol patterns in the pattern dictionary **4** and outputs coincident character patterns or symbol patterns to a character conversion unit **6**, **6** is a character conversion unit which converts the input character patterns or symbol patterns to corresponding character codes or symbol codes and stores them in a document data storage unit **7**, **7** is a document data storage unit which stores the character codes or symbol codes and display information, etc., **8** is an editing unit which manages the display information, **9** is a display control unit which performs processing and control for preparing a character fonts or symbol fonts from the character codes or symbol codes and displaying them in a display unit **10**, and **10** is a display unit which displays a processing result of said display control unit.

Fig. 2 is a diagram showing the above OCR input part **1** and a screen part of said display control unit **9**. The OCR input part **1** scans characters on an original **11** in the horizontal direction by hand of an operator, the characters are input into the aforesaid document preparation device and processed, then displayed on the screen of said display unit **10**.

Next, operations of this actual example will be illustrated. If an operator holds the OCR input **1** by hand and horizontally writes characters on the original **11** prepapred beforehand as shown in Fig. 2, he scans a character string of the uppermost paragraph from the left to the right and then scans a character string of the next paragraph from the left to the right.

The OCR input part **1** photoelectrically converts characters on the original manuscript **11** shown in Fig. 3(A) by manual scanning of above operator and outputs the resultant signal to the input control unit **2**. The input control unit **2** judges the input charac-

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ters are horizontal writing or vertical writing (the input direction is row direction or column direction) from changes of character coordinates input from the OCR input part **1**. In this case, if the characters are judged to be the horizontal writing, a horizontal writing flag is fixed at the format flag **3**. Simultaneously, the input control unit **2** converts the signal input

from the OCR input part **1** to a pattern and outputs it to the character recognition control unit **5**. The character recognition control unit **5** collates the pattern signal input from the input control unit **2** and a pattern retrieved from the pattern dictionary **4**, this pattern is output to the character conversion unit **6** if a pattern coincident with said pattern signal is found or an error message is output to the display control unit **9** if a pattern is not found. The character conversion unit **6** converts a pattern input from the character recognition control unit **5**, e. g., a pattern shown in Fig. 3(B) to a corresponding character (or symbol) pattern and stores it in the document data storage unit **7**. On the other hand, the editing unit **8** obtains display information of preset characters, display coordinates and vertical or horizontal writing of said format flag **3** on an edition table as shown in Fig. 4, stores this display information and the said character codes together in the document data storage unit **7**, the display control unit **9** reads the character codes and the display data from the document data storage unit **7**, and displays characters corresponding to the character codes on the screen of said display unit **10** according to the document input direction of said display data, character size and coordinate positions. Accordingly, if the original **11** is scanned in the horizontal direction by the OCR input part **1** as described above, it is displayed as 「イツモ…」 on the screen

of said display unit **10**. Moreover, the character codes and the display information in the document data storage unit **7** can be read or printed out by a non-illustrated printing device.

Fig. 6 is a flow chart showing the character input display operations of above device. If the photoelectric conversion signal of characters is input by the OCR input part **1** in step 601, the input control unit **2** judges whether a horizontal writing or a vertical writing in step 602, if it is not a horizontal writing document, a vertical writing flag stands at the format flag **3** in step 603; if it is not a horizontal writing document, a horizontal writing flag stands at the format flag **3** in step 604. Next, the input control unit **2** converts the input signal to a pattern and sends it to the character recognition control unit **5** in step 605. The character recognition control unit **5** collates the pattern retrieved from the pattern dictionary **4** in step 606 and the input pattern in step 607 and judges whether the input pattern and the retrieved pattern are coincident in step 608. If it is judged that the input pattern is not coincident in the step 608, an error message is displayed on the screen in step 609; if the input pattern is judged to be a coincident pattern, the pattern is output to the character conversion unit **6**. The character conversion unit **6** converts the input pattern to character codes in step 610 and stores them in the document data storage unit **7**. On the other hand,

the editing unit **8** obtains display information in step 611, and this display information is stored in the document data storage unit **7** with the said character codes in step 612. The display control unit **9** displays the characters on the screen of said display unit **10** in step 613.

This actual example enables to input characters into the document preparation device and display or print them, simplify the input of an original and enhance the efficiency of document input operation only by manually scanning characters on the original with the OCR input part.

[Effects of the Invention]

As described above, the document preparation device of this invention enables to simply input the contents of an original to the device.

IV. Brief Description of the Drawings

Fig. 1 is block diagram showing one actual example of document preparation device of this invention, Fig. 2 is showing document input operation example based on device shown in Fig. 1, Fig. 3 is diagram showing original and pattern example in pattern dictionary input by device of Fig. 1, Fig. 4 is diagram showing display information example obtained by editing unit shown in Fig. 1, Fig. 5 is diagram showing screen example displayed on display unit shown

in Fig. 1, and Fig. 6 is operation flow chart of device shown in Fig. 1.

1 ... OCR input part

2 ... input control unit

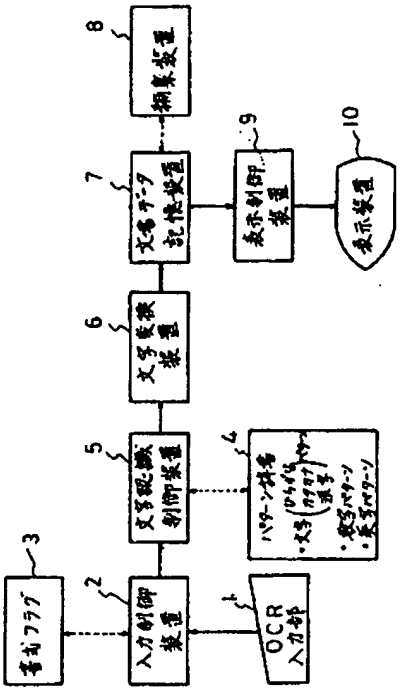
4 ... pattern dictionary

5 ... character recognition control unit

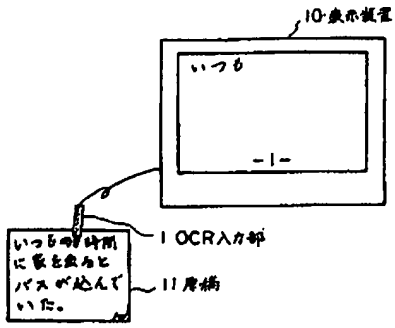
6 ... character conversion unit

7 ... document data storage unit

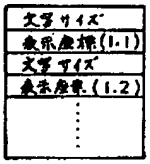
10 ... display unit



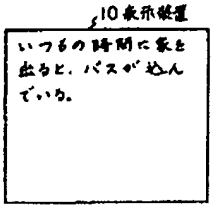
第 1 図



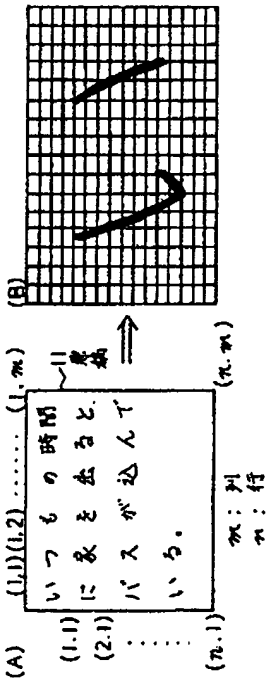
第 2 図



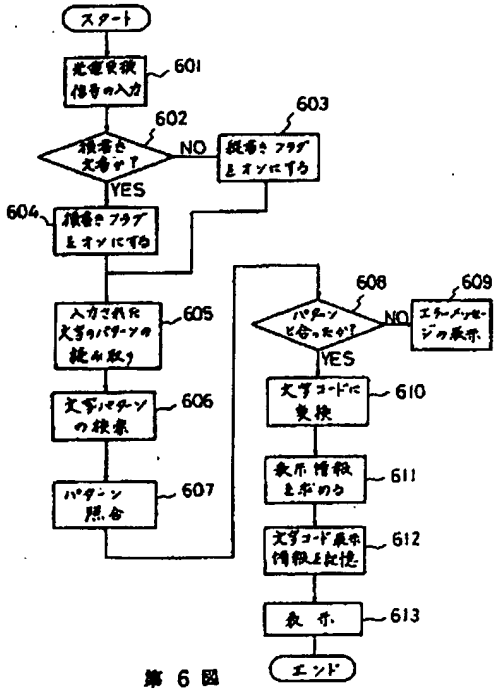
第 4 図



第 5 図



第 3 図



第 6 図

Fig. 1

1 ... OCR input part

2 ... input control unit

3 ... format flag

4 ... pattern dictionary

- character (cursive kana character, square kana character, Chinese character) patterns
- number patterns
- English patterns

5 ... character recognition control unit

6 ... character conversion unit

7 ... document data storage unit

8 ... editing unit

9 ... display control unit

10 ... display unit

Fig. 2

1 ··· OCR input part

10 ··· display unit

11 ··· original

(on screen **10**) Always

(on original **11**) Buses are always crowded if left home.

Fig. 3

11 ··· original

(on original **11**) Buses are always crowded if left home.

m: column

n: row

Fig. 4

(from top)

character size

display coordinates (1,1)

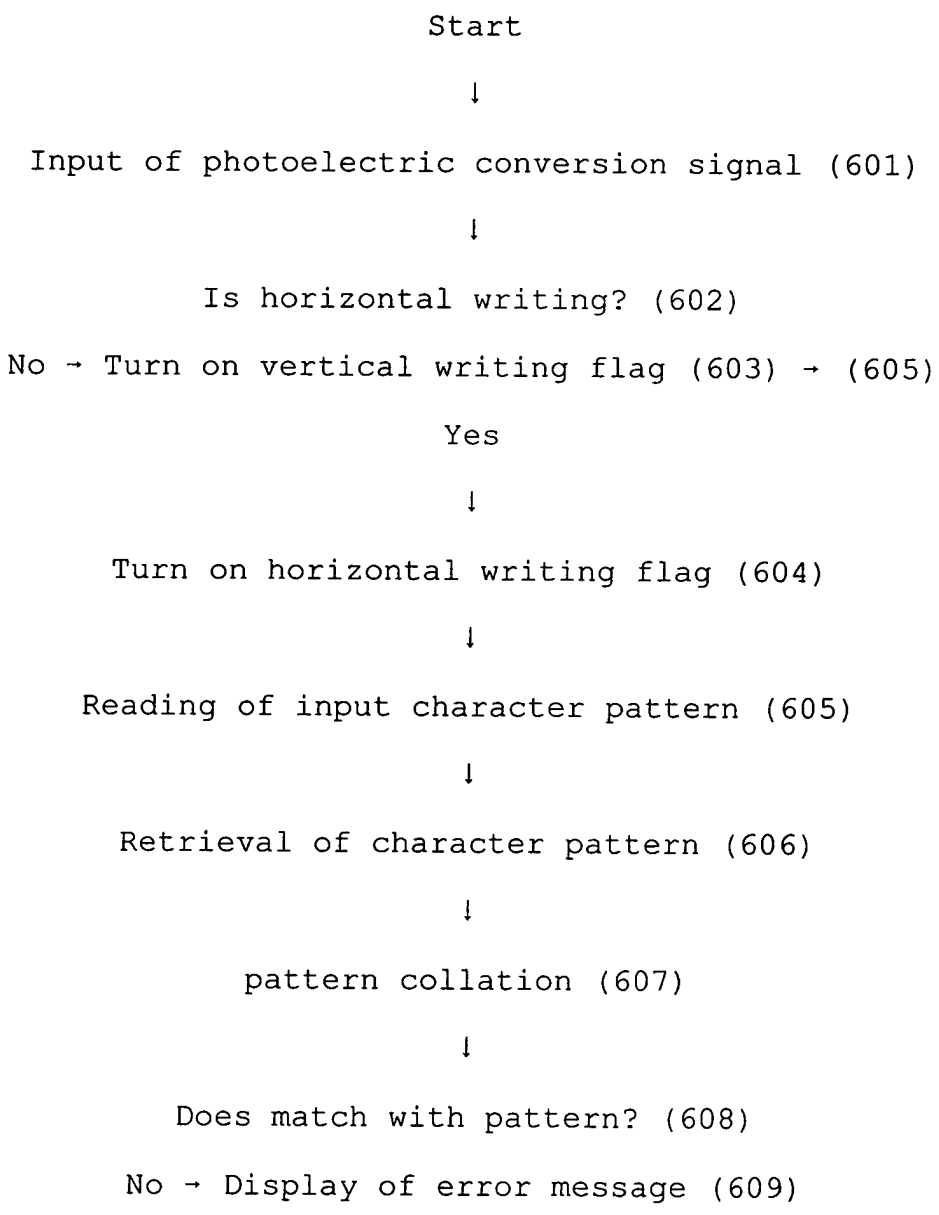
character size

display coordinates (1,2)

Fig. 5

(on screen **10**) Buses are always crowded if left home.

Fig. 6



Yes

↓

Convert to character codes (610)

↓

Obtain display information (611)

↓

Store character display information (612)

↓

Display (613)

↓

End